IN THE CLAIMS

Please amend the claims as follows.

1. (Currently Amended) A method comprising:

receiving a first function packet, including a first function packet header and a first function packet segment, from a first function packet source, wherein the first function packet header indicates a first function packet length and a first router packet data length, wherein the first router packet data length is determined from pre-stored first router packet length information relating to a first function;

determining whether the first function packet segment has a length at least equal to the first router packet data length;

if so, generating a first router packet that includes the first function packet segment, wherein the first router packet has a first router packet data length that is less than or equal to the first function packet length;

sending the first router packet to a first router;

receiving a second function packet, including a second function packet header and a second function packet segment, from a second function packet source, wherein the second function packet header indicates a second function packet length, different from the first function packet length, and a second router packet data length, wherein the second router packet data length is determined from pre-stored second router packet length information relating to a second function;

determining whether the second function packet segment has a length at least equal to the second router packet data length;

if so, generating a second router packet that includes the second function packet segment, wherein the second router packet has a second router packet data length that is less than or equal to the second function packet length; and

sending the second router packet to a second router.

~~generating a set of associated router packets from a function packet received from a function packet source, wherein generating the set of associated router packets comprises~~

~~determining the router packet length from pre-stored router packet length information that can be different from function to function, and wherein each router packet has a router packet data length that is less than or equal to a function packet length; and~~

~~sending the set of associated router packets to a router~~.

2-5. (Canceled)

6. (Previously Presented) The method of claim 1, wherein the router packet length information is stored in a router packet length table.

7. (Previously Presented) The method of claim 6, further comprising:

manually re-configuring the pre-stored router packet length information.

8. (Currently Amended) The method of claim 1, wherein the pre-stored first router packet length information is stored in a router packet length table, the method further comprising:

~~determining router packet length from pre-stored router packet length information stored in a router packet length table;~~

dynamically adjusting the pre-stored first router packet length information based on system performance measurements;

monitoring network performance including latency of transmission of the first router packet ~~packets~~ to the first router; and

updating values within the router packet length table in accordance with the network performance.

9. (Currently Amended) The method of claim 1, further comprising ~~wherein generating the set of associated router packets comprises~~:

selecting a next first ~~segment of the~~ function packet segment, wherein the next first function packet segment has a segment length that is related to the first router packet data length;

generating another first [[a]] router packet, which includes the next first function packet segment; and

repeatedly selecting a [[the]] next first segment and generating another first [[the]] router packet until all of the first function packet has been included in a [[the]] set of associated first router packets.

10. (Currently Amended) The method of claim 9, wherein generating the set of associated first router packets comprises:

generating a first router packet header, which indicates the first router packet data length.

11. (Currently Amended) The method of claim 9 [[1]], further comprising ~~wherein sending the set of associated router packets comprises~~:

sending the set of associated first router packets to the first ~~a source router for delivery toward a destination~~ router.

12-14. (Canceled)

15. (Currently Amended) A method comprising:

a source adaptor generating a set of associated router packets from a function packet received from a function packet source, wherein the function packet has a variable length, wherein the function packet comprises function packet data, and wherein generating the set of associated router packets comprises:

determining the function packet length and a [[the]] router packet data length, wherein the router packet length is determined from a router packet length table;

selecting a next segment of the function packet, wherein the next segment has a segment length that is less than or equal to the router packet data length;

generating a router packet, which includes the next segment; and

repeatedly selecting the next segment and generating the router packet until all of the function packet data has been included in the set of associated router packets;

wherein each router packet has a router packet data length that is less than or equal to the [[a]] function packet length;

the source adaptor sending the set of associated router packets to a source router;

the source router sending the set of associated router packets toward a destination router;

the destination adaptor receiving the set of associated router packets from the destination router;

the destination adaptor generating a re-assembled function packet from the set of associated router packets; and

the destination adaptor sending the re-assembled function packet to a function packet destination.

16. (Canceled)

17. (Original) The method of claim 15, wherein generating the re-assembled function packet comprises:

removing a router packet header of each packet of the set of associated router packets.

18-20. (Canceled)

21. (Currently Amended) An apparatus comprising:

at least one router, which is operable to communicate with other routers using packet-based communications; and

multiple processing elements, wherein selected ones of the multiple processing elements include

at least one adaptor, operably connected to a router, which is operable to generate a set of associated router packets from a function packet received from a function packet source, wherein the function packet has a variable length, wherein the function packet comprises function packet data, and wherein each router packet has a router packet data length that is less than or equal to a function packet length, and to send the set of associated router packets to a router, and

at least one function packet source, operably connected to the adaptor;

wherein generating the set of associated router packets comprises:

determining the function packet length and the router packet data length, wherein the router packet length is determined from a router packet length table;

selecting a next segment of the function packet, wherein the next segment has a segment length that is less than or equal to the router packet data length;

generating a router packet, which includes the next segment; and

repeatedly selecting the next segment and generating the router packet until all of the function packet data has been included in the set of associated router packets.

22. (Original) The apparatus of claim 21, wherein an adaptor comprises:

a first data buffer, which is operable to receive the function packet from the function packet source;

a router packet formation module, which is operable to generate the set of associated router packets from the function packet; and

a router interface, which is operable to send the set of associated router packets to the router.

23. (Original) The apparatus of claim 22, wherein the adaptor further comprises:

a second data buffer, which is operable to receive a different set of associated router packets and re-assemble a second function packet; and

a packet-based communications element interface, which is operable to send a re-assembled function packet to a function packet destination.

24. (Original) The apparatus of claim 21, further comprising at least one antenna, which is operable to provide an interface between an air interface and the apparatus.

25. (Currently Amended) A computer-readable medium having program instructions stored thereon to perform a method, which when executed within an electronic device, result in:

receiving a first function packet, including a first function packet header and a first function packet segment, from a first function packet source, wherein the first function packet header indicates a first function packet length and a first router packet data length, wherein the first router packet data length is determined from pre-stored first router packet length information relating to a first function;

determining whether the first function packet segment has a length at least equal to the first router packet data length;

if so, generating a first router packet that includes the first function packet segment, wherein the first router packet has a first router packet data length that is less than or equal to the first function packet length;

sending the first router packet to a first router;

receiving a second function packet, including a second function packet header and a second function packet segment, from a second function packet source, wherein the second function packet header indicates a second function packet length, different from the first function packet length, and a second router packet data length, wherein the second router packet data length is determined from pre-stored second router packet length information relating to a second function;

determining whether the second function packet segment has a length at least equal to the second router packet data length;

if so, generating a second router packet that includes the second function packet segment, wherein the second router packet has a second router packet data length that is less than or equal to the second function packet length; and

sending the second router packet to a second router.

~~generating a set of associated router packets from a function packet received from a function packet source, wherein generating the set of associated router packets comprises determining the router packet length from pre-stored router packet length information that can be different from function to function, and wherein each router packet has a router packet data length that is less than or equal to a function packet length; and~~

~~sending the set of associated router packets to a router~~.

26. (Currently Amended) The computer-readable medium of claim 25, wherein execution of the method further results in:

determining the first function packet length and the first router packet data length from a first function packet header;

selecting a next first ~~segment of the~~ function packet segment, wherein the next first function packet segment has a segment length that is related to the first router packet data length;

generating another first [[a]] router packet, which includes the next first function packet segment; and

repeatedly selecting a [[the]] next first segment and generating another first [[the]] router packet until all of the first function packet has been included in a [[the]] set of associated first router packets.

27. (Currently Amended) The computer-readable medium of claim 26, wherein execution of the method further results in:

receiving a second set of associated router packets from a [[the]] router;

re-assembling a third [[second]] function packet from the second set of associated router packets; and

sending the third [[second]] function packet to a function packet destination.

28. (New) The method of claim 1, wherein the first function packet segment includes first function data.

29. (New) The method of claim 1, wherein the first and second function packet segments include first and second function data, respectively.

30. (New) The method of claim 1, wherein the first and second routers are one and the same.

31. (New) The method of claim 1, wherein the first router packet data length is relatively short, corresponding to a relatively slow rate function.

32. (New) The method of claim 1, wherein the second router packet data length is relatively long, corresponding to a relatively fast rate function.